OPTIONAL TRAINING CURRICULUM

Application of Electrocardiogram Electrodes and Monitor

KY Ambulance Service Specific Continuing Education Curriculum for the Emergency Medical Technician Basic (EMT-B) using a Non-invasive Monitoring Device

INSTRUCTOR MANUAL

Instructions Preparatory to Meeting the EMT-B Scope of Practice Requirements

Kentucky Board of Emergency Medical Services
Pursuant to 202 KAR 7:060 and 7:080

This curriculum relates to the Department of Transportation (D.O.T.) 1994 EMT Basic National Standard Curriculum from the Module 4 Cardiovascular Emergencies component, and is designed as a KY optional Supplemental curriculum referenced in 202 KAR 7:060 and 7:080

INTRODUCTION

This is a minimum twenty (20) minute curriculum for use in an EMT Basic (EMT-B) **continuing education course** designed to instruct EMT-Bs in the placement of EKG electrodes for non-invasive monitoring of the heart. Performance of the skills will be ambulance service specific and the training is primarily designed for EMT-Bs to assist an Advanced Life Support (ALS) provider in patient care.

This curriculum is an optional, KY training Module commencing with the effective date of 202 KAR 7:060 and 7:080. An EMT-B working for an ambulance service contracted with a physician medical director and offering this procedure in patient care shall be required to obtain this training through continuing education. This curriculum, or an equivalent curriculum, that has been submitted to, reviewed and recommended to the Kentucky Board of Emergency Medical Services for approval, is to be used. Training through continuing education is for a person who received their initial EMT-B training prior to the introduction of this curriculum as acceptable training and procedure for use within the KY EMT-B scope of practice.

OBJECTIVES:

Psychomotor

1. The student shall appropriately apply the electrodes to a patient.
2. The student shall appropriately select the correct size electrodes per the patient (adult/pediatric).
3. The student shall appropriately apply the EKG leads in the proper placement.
4. The student shall correctly set up the EKG monitor.
5. The student shall be able to provide appropriate on-going patient assessment while monitoring.
6. The student shall be able to appropriately troubleshoot for operational problems (i.e.: disconnected cord, disconnected lead, etc)

WORK ENVIRONMENT: With ambulance service having written agreement with physician Medical Director.

LEAD INSTRUCTOR QUALIFICATIONS: Minimum, KY EMT-B Instructor. If this person does not additionally have ALS credentials, an adjunct faculty holding current ALS credentials may need to be

recruited to teach this lesson based on this curriculum.

RECOMMENDED MINIMUM TIME TO COMPLETE: Minimum of twenty (20) minutes which combines part Lecture overview and part Skills Practice.

EQUIPMENT:

EKG monitor
EKG electrodes
EKG leads

OVERVIEW

NOTE* OF IMPORTANCE TO ALL INSTRUCTORS:

It is not within the Scope of Practice of the EMT Basic for them to discern the various heart rhythms. Distinguishing the various heart rhythms is the responsibility of ALS personnel. Please stress this to the EMT-B students so they will understand that their responsibility is only to attach the electrode leads to the patient in preparation for monitoring.

Emphasize to the EMT-B: Treat the patient, not the device!

I. Describe the basic concept of EKG monitoring
   A. Monitoring a patient lends insight into the electrical status of the heart.
   B. The goal of applying monitor leads on a patient is to get a rhythm pattern to appear on an oscilloscope or on a paper strip.
   C. The EKG machine records the positive and negative electrical impulses from the heart over time.

II. Electrode placement on the patient
   A. You can obtain different views of the heart by placing electrodes over different areas of the heart.
   B. Electrodes are sized as adult or pediatric.
   C. Electrodes are placed on the patient to correspond to the preferred view (I, II, or Modified Chest Left (MCL1)
      1. The skin under the electrode should be dry.
      2. The skin may need to be abraded to rid of old skin and dirt for better adhesion of the electrode.
      3. Peel the electrode off the paper or peel the paper off the electrode (depending on the brand of electrodes)
      4. Apply the electrode to the skin
   D. Generally only 3 lead placements are used.
      1. I
      2. II
      3. MCL1
   E. Placement of Lead I
      1. The positive electrode is placed on the left arm
      2. The negative electrode is placed on the right arm
      3. The Lead Selector is placed on Lead I
   F. Placement of Lead II
      1. The positive electrode is placed on the left leg
      2. The negative electrode is placed on the right arm
      3. The Lead Selector is placed on Lead II

Placement of Lead MCL1

1. The positive electrode is placed on the 4th intercostal space to the right of the sternum
2. The negative electrode is placed on the left arm
3. The Lead Selector is placed on Lead III

III. EKG monitor set up

A. Turning the monitor on
B. Connecting the lead wires to the monitor
C. Connecting the lead wires to the electrodes
D. Selecting the proper Lead selection on the monitor to correspond to the Lead placement on the patient
E. Record a strip

IV. Trouble shooting

A. Monitor does not come on
   1. not turned on
   2. dead batteries
B. Flat base line appears on monitor
   1. Lead wires not connected to the monitor
C. Wavy base line appears on monitor
   1. Lead wires not connected to the electrodes
   2. 60 cycle interference
D. Small complexes on screen
   1. Turn gain up
   2. Make sure Lead selected corresponds to Lead placement
E. Volume
   1. Too low - turn volume up
   2. Too loud - turn volume down
F. No printout
   1. Check if paper is jammed
   2. Replace paper if out

SKILL SEQUENCE

1. Turn monitor on
2. Cleanse the skin. If the package comes with a small abrasive scrub pad abrade the skin prior to applying.
3. Place the adhesive monitoring electrode appropriately.
4. Snap the Lead wire onto the electrode.
5. Connect the Lead wire into the monitor.
6. Select the proper Lead view on the monitor.
7. Adjust the gain and volume controls as needed.
8. Record a 6-second strip.